

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: SONZOGNI, Stefano

SERIAL NO.:

FILED: Herewith

TITLE: BORING UNIT FOR COMPLEX PARTS, PARTICULARLY FOR DOOR HANDLES,
WITH DIFFERENTIAL CONTROL SYSTEMS

Preliminary Amendment: CLAIM AMENDMENTS

1. (Currently amended) Boring unit for complex parts, ~~characterized in that it comprises, said~~
boring unit comprising:

a fixing pin ~~(A)~~, suitable for holding ~~the~~ a piece ~~(O)~~ in its a hole of the pin, and
two concentric cylinders ~~(Ci, Ce)~~ coaxial with said pin ~~(A)~~, which are set rotating in
the same direction by two electric motors ~~(Mi, Me)~~, and

wherein ~~the~~ an inner cylinder ~~(Ci)~~ is provided, at its end facing ~~the~~ a grip ~~(Ac)~~ of the pin ~~(A)~~,
with a conical toothing ~~(Cie)~~, and wherein ~~the~~ an outer cylinder ~~(Ce)~~ is provided, at its end facing
the grip ~~(Ac)~~ of the pin ~~(A)~~, with a tool-holder ~~(P)~~ with radial translation means ~~(Pm)~~ of ~~the~~ tools
~~(U)~~ and with a bevel gear wheel ~~(Pe)~~ meshing with the conical toothing ~~(Cie)~~ of the inner cylinder
~~(Ci)~~ and connected with the radial translation mechanism ~~(Pm)~~ of the tools ~~(U)~~.

2. (Currently amended) Boring unit for complex parts according to claim 1, ~~characterized in~~
~~that the~~ wherein said radial translation of the tools ~~(U)~~ is obtained by rotating said cylinders ~~(Ci, Ce)~~
at different speeds by means of electric motors ~~(Mi, Me)~~, that is, by generating a relative motion
between them, and consequently the bevel gear wheel ~~(Pe)~~ of the tool-holder ~~(P)~~ meshing with the
conical toothing ~~(Cie)~~ of the inner cylinder ~~(Ci)~~ rotates on its own axis, thus operating said radial
translation mechanisms ~~(Pm)~~ of the tools ~~(U)~~.

3. (Currently amended) Boring unit for complex parts, in particular for door handles, according to ~~claims 1, 2, characterized in that the~~ Claim 1, wherein said grip (Ae) of the traction pin (A) is square and can be expanded, and wherein at the opposite end of said traction pin (A) there is the pin further comprises a mechanism (Am) that expands the grip (Ae) and a mechanism (At) that causes the axial translation of the whole traction pin (A), and wherein said grip (Ae) of the traction pin (A) is positioned at the centre a center of the tool-holder (P) of said outer cylinder (Ce).

4. (Currently amended) Boring unit for complex parts, in particular for door handles, according to ~~claims 1, 2, 3, characterized in that both the~~ Claim 1, wherein said tool-holder (Pu) and the tools (U) and/or the couplings (Pu) of the tools (U) are L or Z-shaped, in such a way as to ensure the boring, that is, the action of the tools (U) themselves, in a concentric area outside the tool-holder (P) on the side opposite the outer cylinder (Ce).

5. (Currently amended) Boring unit for complex parts, in particular for door handles, according to ~~claims 1, 2, 3, 4, characterized in that it comprises~~ Claim 1, further comprising: an electronic circuit (X), that can be programmed, set or controlled manually, which controls the motion of both the electric motors (Mi, Me), the locking and the translation of the square traction pin (A), and wherein said electronic circuit (X) reads the instantaneous positions and the speeds of both motors (Mi, Me) of the rotary cylinders (Ci, Ce), calculates the relative position of the tool-holder (P) according to the relative positions of the two motors (Mi, Me) and provides for controlling them so that, though rotating, they remain synchronized and allow also the controlled shifting according to a precise movement diagram that corresponds to the working path.